

09/44, 766

1. A fuel injector having a fuel inlet, a fuel outlet, and a fuel passageway extending from the fuel inlet to the fuel outlet along a longitudinal axis, the fuel injector comprising:

a body having an inlet portion, an outlet portion, and a neck portion disposed between the inlet portion and the outlet portion, the neck portion having a surface defining a portion of the fuel passageway;

an armature adjacent the inlet portion of the body;

a needle operatively connected to the armature;

a seat defining a funnel having a conical end disposed within the body, the conical end engaging the needle to form a seal in a first position of the needle, the seat proximate the needle and having a first face, a second face, and a circumferential surface disposed between the first face and the second face, the circumferential surface including a first zone and a second zone that are connected by an intermediate zone extending substantially perpendicular to the first and second zones, the intermediate zone contiguously engaging an inner surface of the neck portion of the body, the inner surface being located between the conical end of the funnel and the fuel outlet; ~~and~~

a seal disposed between the second zone of the seat and the body so that the seal thermally isolates the second zone of the seat from the body; and

a swirl generator disposed proximate the seat, the swirl generator being contiguous with the seal.

8. A body and a seat for a fuel injector having a fuel inlet, a fuel outlet, and a fuel passageway extending from the fuel inlet to the fuel outlet along a longitudinal axis, the body and the seat comprising:

a body having an inlet portion, an outlet portion, and a neck portion disposed between the inlet portion and the outlet portion, the neck portion having a surface defining a portion of the fuel passageway; and

a seat defining a funnel, the funnel having a conical end disposed within the body, the seat having a first face, a second face, and a circumferential surface disposed between the first face and the second face, the circumferential surface including a first zone and a second zone that are connected by an intermediate zone extending substantially perpendicular to the first and second zones, the intermediate zone contiguously engaging an inner surface of the neck portion of the body, and the second zone being thermally isolated from the body, the inner surface being located between the conical end of the funnel and the fuel outlet; and

a swirl generator disposed proximate the seat, the swirl generator having a portion contiguous the neck portion of the body and one of the first and second faces.

12. A method of forming a fuel injector having a fuel inlet, a fuel outlet, a fuel passageway extending from the fuel inlet to the fuel outlet along a longitudinal axis, a body having an inlet portion, an outlet portion, and a neck portion disposed between the inlet portion and the outlet portion, the neck portion having a surface defining a portion of the fuel passageway, and a seat defining a funnel, the funnel having a conical end, the seat having a first face, a second face, and a circumferential surface disposed between the first face and the second face, the circumferential surface including a first zone and a second zone that are connected by an intermediate zone extending substantially perpendicular to the first and second zones, the method comprising:

contiguously engaging the intermediate zone of the seat with an inner surface of the neck portion of the body, the inner surface being located between the conical end of the funnel and the fuel outlet; and

thermally isolating the second zone of the seat from the body with a seal contiguous to a swirl generator disposed proximate the conical end of the funnel.